

Remarks

Claims 1 through 20 are pending. In the outstanding *Office Action*, The Claims were rejected on the basis of obviousness only.

Specifically, Claims 1-6, 9 and 10 were rejected under 35 USC §103(a) as unpatentable over *Krzysik et al.*, United States Patent No. 6,287,581. The Examiner noted the method of lotion application disclosed by *Krzysik et al.* involved heating a lotion composition above its melting point and applying the melted composition to the outer surface of the body of facing material and resolidifying the melted composition. The Examiner further noted that *Krzysik et al.* did not disclose delay times for moisture penetration or contact angles for water; however, these were deemed merely properties of the resulting product of *Krzysik et al.* which discloses lotions that are mostly petrolatum (mineral jelly) based. See Col. 18 of *Krzysik et al.*

Claims 1 to 8, and 11 to 20 were rejected under 35 USC §103(a) as unpatentable over *Eichhorn et al.*, European Patent Publication EP 1 029 977 A1. The Examiner noted that the *Eichhorn et al.* reference disclosed treating absorbent paper products with a composition comprising an oil, wax, and emulsifying agent and water. The *Eichhorn et al.* compositions are water-in-oil compositions applied to the paper in melted form and then cooled to solidify the lotion composition on the paper. The emulsions are solid or semi-solid at 30° C. See *Eichhorn et al.*, Col 6, lines 42-46.

The Examiner further noted United States Patent No. 6,860,967 to *Baumoller et al.* as disclosing a tissue paper penetrated with a lotion composition comprising a water/oil emulsion and at least one wax.

The application has been amended to correct a typographical error on page 42; to bold a reference to **Figure 11** for clarity.

The rejections of the claims in the outstanding office action are respectively traversed. The present invention is directed to the use of an aqueous wax dispersion for improving the barrier properties of a cellulosic web such as tissue paper. Claim 1 is representative of the subject matter of this invention:

1. A method of making an absorbent cellulosic web resistant to moisture penetration comprising:
 - (a) wetting at least one surface of the web *with an aqueous dispersion including a wax and an emulsifier*; and
 - (b) *heating the web above the melting temperature of the wax to fuse the wax of the dispersion* and to provide a hydrophobic surface on the web, the wax being disposed in the web *so that the open interstitial microstructure between fibers in the web is substantially preserved and the web has a laterally hydrophobic surface which exhibits a moisture penetration delay of at least about 2 seconds as well as a contact angle with water of at least 50 degrees at one minute of contact time with the web.*

The method of present invention imparts barrier properties to a cellulosic web, for example, to prevent mucus or other fluid from penetrating a treated ply of tissue paper or a napkin, for example. The Examiner's attention is directed to the discussion beginning on page 42, lines 5 and following relating to moisture penetration testing of the arrangement of plies shown in **Figures 8-11** of the application as filed. In each of the arrangements of **Figures 8-11**, a test specimen was placed over wet filter paper and an approximately 500g weight **90** was applied to the upper specimen swatch to produce a pressure approximately one pound per square inch to simulate finger pressure. After 10 seconds the weight was removed and the wetted area of each sheet was measured. Results are set forth in Table 3, reproduced below.

Table 3 – Wetted Surface Area (in cm²) of Layers Under 1 PSI Pressure

| Towel Web Structure | | Control | Example 14 (Figure 8) | Example 15 (Figure 9) | Example 16 (Figure 10) | Example 17 (Figure 11) |
|---------------------|---------|---------|--------------------------|--------------------------|---------------------------|---------------------------|
| Top Ply | Layer 1 | 17.2 | 0 | 0 | 8.3 | 0 |
| | Layer 2 | 17.2 | 0 | 14.9 | 8.3 | 19.1 |
| Bottom Ply | Layer 3 | 18.5 | 25 | 22.7 | 21.8 | 20 |
| | Layer 4 | 18.5 | 25 | 22.7 | 21.8 | 20 |

The multilayer, treated structure exhibited an unexpectedly complete barrier to moisture penetration when the two treated surfaces of the towel were placed in contact with one another (Example 14). In all cases, the treated sheet exhibited resistance to moisture penetration and increased wetted areas in some plies over the control, suggesting migration of the emulsifier into the sheet.

Note that the top ply in Example 14 had no wetted area and that the bottom ply had a very large wetted area relative to the control, or untreated sample.

Regarding United States Patent No. 6,287,581 to *Krzysik et al.*, the reference specifically provides that a treated liner, for example, is permeable to an aqueous liquid. In this regard the Examiners attention is directed to Column 14, lines 38 and following wherein it is noted that liner **18** is permeable to aqueous liquids. This of course is a requirement since the liner is intended to wick moisture away from the skin. Thus, it is believed clear that the '581 patent teaches away from the present invention in this respect. The relevant portion of *Krzysik et al.* is reproduced below.

The bodyside liner 18 consists of a nonwoven or other soft material for contacting the wearer's skin. The bodyside liner 40 18 has an outer (exterior) surface 28 that faces toward the wearer and an inner (interior) surface 30 that faces away from the wearer. The bodyside liner 18 is described in more detail below. The bodyside liner 18 is compliant and soft feeling to the wearer. The bodyside liner 18 may be any soft, 45 flexible, porous sheet that is aqueous liquid permeable, permitting aqueous liquids to readily penetrate into its thickness. A suitable bodyside liner 18 may be manufactured from a wide range of materials, such as natural fibers (e.g., wood or cotton fibers), synthetic fibers (e.g., polyester or 50 polypropylene fibers) or from a combination of natural and synthetic fibers or reticulated foams and apertured plastic films.

It is further noted, that both the '581 *Krzsik et al.* patent and the '977 *Eichhorn et al.* publication specifically teach not to use aqueous emulsions as is claimed in this case. In this regard, the Examiners attention is directed to the '581 patent at Column 16, lines 26 and following wherein it is specifically required that the compositions be solid at room temperature so that they do not migrate into the web:

The compositions of the present invention are solid or semisolid at 30° C. As used herein, the term "semisolid" refers to a composition having a rheology typical of pseudo-plastic or plastic fluids. Because the compositions are in at 20 at least a semisolid state at ambient temperatures, migration of the composition is minimized. The compositions, being solid or semisolid at ambient temperatures, do not have the tendency to migrate into the interior of the bodyside liner 18 or the tissue material 20 and ultimately into the absorbent 25 article 10 to which the composition has been applied. The compositions are transferable to the wearer's skin by normal contact, movement of the wearer, or the body heat of the wearer.

So also, the '977 European Publication provides that formulations that are liquid (as is claimed in the present application) are to be avoided. See paragraph 0006:

[0006] Other formulations that are liquid at ambient temperature generally penetrate below the surface fibres of a tissue paper carrier long after their application to the paper. In fact, such lotions will tend to migrate into a tissue paper carrier until equilibrium is reached, i.e. until all the layers constituting the tissue paper contain the same quantity of lotion. This may be arrested to a degree by reducing the amount of lotion applied to the paper, however, the proportion of lotion present on the surface will always be small compared to the amount absorbed into the tissue paper bulk. Thus, while these compositions may improve the softness of the paper product, the surface will not have a lotion-like feel.

Thus, it is believed clear that the two primary references relied upon in the rejections do not teach or suggest the present invention. In fact, the references teach away, because an aqueous dispersion is liquid at room temperature. In such circumstances, the claims should be allowed. In this respect, *In re Geisler* 43 USPQ2d 1362, 1365 (CAFC 1997) notes that even a *prima facie* case of obviousness is rebutted if it is shown that the art teaches away in any material respect. It is further noted in *Geisler* is that the existence of unexpected properties in the range claimed rebut a *prima facie* case. *Geisler* at 43 USPQ2d 1365. In this case, the references teach not to use liquids such as the aqueous wax dispersion recited in the claims and do not remotely suggest heating that applied dispersion above its melting point to impart barrier properties in the web. Moreover, the barrier properties are unexpected.

With respect to the *Baumoller et al.* reference cited, United States Patent No. 6,860,967 it is noted that the lotions taught in that reference are water in oil emulsions (W/O) and that any wax content is simply optional. See Column 3, line 11 as well as Column 7, lines 44 plus of the '967 patent. In contrast, the claimed subject matter in this case is directed to the use of an aqueous dispersion on a web, the dispersion including a wax and emulsifier followed by heating the wax to fuse the wax of the dispersion and provide a hydrophobic surface on the web.

Regarding the Examiners comments in the outstanding rejections that the properties claimed in this case may be inherent in different prior art compositions, it is

noted that unrecognized properties are an improper basis in which to reject a claim for obviousness. See *Van Veen v. United States*, 156 USPQ 403, 405-406 (US Cl Ct 1967):

[1] It is incorrect to hold that an invention was obvious when made, simply because the invention is simple in nature and is easily understood when described in a patent specification. Experience has shown that some of the simplest advances have been the most nonobvious. The prior art, in addition to the Daiber '380 patent mentioned above, cited by the defendant, provides a prior art base which renders the distinctions between the prior art and the subject invention even more significant. None of the prior art cited by defendant copes with the problem of heat loss through the peripheral seams of the sleeping bag.

[2] Defendant says that under the rule of *General Electric Co. v. Jewel Incandescent Lamp Co.*, 326 U.S. 242, 247-49, 67 USPQ 155, 157-158 (1945), it is of no moment that the prior art (particularly MIL-B-830) failed to recognize that seams of this type would prevent or diminish heat loss. 1 But the Supreme Court has also indicated that "accidental results, not intended and not appreciated, do not constitute anticipation." *Eibel Process Co. v. Minnesota & Ontario Paper Co.*, 261 U.S. 45, 66 (1923); See also *Tilghman v. Proctor*, 102 U.S. 707, 711 (1880). In the *General Electric* case, the court found that the new use, advantage, or quality was apparent in view of the prior art (see 326 U.S. at 248, 67 USPQ at 157). In the present case, it was not obvious to convert the special 30-inch seam of the Military Specification, even though it happened to be insulated, into the overall peripheral sleeping bag seams of the plaintiff's patent. In that respect the unrecognized quality (i.e., heat-loss prevention) inhering in the short seam of the Military Specification was merely "accidental" and no bar.

In any event, none of the art remotely suggests the use of an aqueous wax dispersion followed by heating to enhance barrier as is claimed, so that properties of other compositions are not relevant to the claimed method.

This response is believed timely filed. If any additional extensions are required, please consider this paper a *Petition* therefor and charge our Deposit Account No. 50-0935. Likewise, please charge our Deposit Account if any additional fees are required.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael W. Ferrell", written in a cursive style.

Michael W. Ferrell
Reg. No. 31,158

Ferrells, PLLC
4400 Fair Lakes Court, Suite 201
Fairfax, VA 22033-3899
Telephone: (703) 968-8600
Facsimile: (703) 968-5500
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